



Special Use Airspace and Military Training Routes

Pilots must sharpen their awareness of the potential for traffic conflicts where military aircraft practice high-speed maneuvers. Although this article outlines U.S. operations, most other countries have similar requirements that demand pilot vigilance.

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by

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An air carrier aircraft was climbing through 13,000 feet when the air traffic controller reported a military aircraft flying toward it from the 1 o'clock position, slightly below. The flight crew of the civil aircraft saw the other aircraft and noticed that the closing rate was extremely fast. The first officer stated that the two aircraft were on a collision course and, with a separation of about a mile, the captain initiated an evasive climbing turn to avoid it. The military aircraft was observed to bank sharply left and down, and passed within 500 feet of the airliner.

Another air carrier was climbing through FL290 and the crew was asked by the air traffic controller to expedite the climb. The crew was then advised of traffic at the 1 o'clock position, two miles away. Moments later, a pair of military jet fighters passed the air carrier at less than a half mile and within 100 feet of its altitude. The crew later learned that the military aircraft had strayed beyond the bounds of a military operations area.

The crew of an air carrier aircraft was advised by an air traffic controller that the pilots of two military fighter aircraft were filing a near miss report against them and had indicated that the air carrier was flying in restricted airspace. The civil aircraft crew checked their position and received confirmation from air traffic control that

they were on course and out of the restricted airspace, and that it was the military aircraft which had been beyond the bounds of the restricted airspace.

These potentially disastrous traffic conflicts occurred while air carrier aircraft were flying in their assigned airspace in the vicinity of airspace used for military maneuvers. That these incidents occurred, even though they are rare, emphasizes the need for all pilots to be familiar with current operations in and near those areas that may be set aside for high-speed military training maneuvers.

During the years 1988 through September 1991, there has been a relatively small but disturbing number of instances in which air carrier aircraft and military aircraft have been involved in traffic conflicts near U.S. special use airspace (SUA) or military training routes (MTR), within which military aircraft are conducting training maneuvers. Pilots reported two dozen deviations, near-midair collisions and conflict incidents in and adjacent to SUA and MTR airspace involving air carrier aircraft during this time period, according to the U.S. Federal Aviation Administration (FAA) and the U.S. National Aeronautics and Space Administration (NASA) Aviation Safety Reporting System (ASRS). Pilots of aircraft flown in the United States must be familiar with

SUA and MTR airspace. Non-U.S. carriers may fly more often within U.S. borders if current restrictions on non-U.S. carrier operations between in-country airports are relaxed through “open skies” agreements.

Even though they may be adhering to proper clearances, air carrier aircraft may be routed close enough to restricted-access areas that minor excursions by military aircraft could create conflicts. Even the minor probability of such a rare occurrence should be considered by pilots who may be routed into the vicinity of such airspace.

“It is critical to the safety of operations in all forms of airspace for pilots of both domestic and international flights to be familiar with operating practices in special

use airspace and military training routes,” said Paul B. Gallant, Office of Air Traffic System Management, FAA.

The origin of special use airspace in the United States predates World War II when various “airspace reservations” and “danger areas” were established pursuant to the Air Commerce Act of 1926 and the Civil Aeronautics Act of 1938 to provide for national security and to denote the existence of hazards to aircraft. Many of these areas were established in locations which, at the time, were in relatively remote parts of the country. These areas were selected not only to enhance security, but also to avoid exposing the population and civil aviation to hazardous activities. The SUA program, as it is known today, was instituted in 1961 as a revision to Part 73 of the U.S. Federal Aviation Regulations (FARs).

From the pilot’s point of view it is important to know how SUA is charted, when it is in effect, and how to contact the controlling agency if necessary. Generally, the best source of this information is the sectional aeronautical chart. Other sources are visual flight rules (VFR) terminal area charts and instrument flight rules (IFR) low altitude en route charts.

Close Encounters of the Wrong Kind

Since the Aviation Safety Reporting System (ASRS) began receiving incident reports in 1976, undesired encounters have persisted between civilian and military aircraft in U.S. aviation operations. The most common circumstance of civilian/military encounters involves operations of both categories of aircraft in the vicinity of special use airspace and military training routes. In its more than 15 years of operations, the ASRS has received reports documenting civilian aircraft penetrations of designated military training airspace, military “spillouts” from training areas into civilian airspace, airborne conflicts in the vicinity of military training routes and “ordinary” near-midair collisions resulting from the mix of civilian and military (particularly high-speed fighter) aircraft in the course of otherwise normal airborne operations.

As with many aviation issues, the basic lessons that surface from each of these incidents are:

- the need to properly prepare for flight operations so as to be aware of potential conflicts and to be knowledgeable about the airspace in which operations will take place as well as nearby airspace; and
- the maintenance of the necessary level of situational awareness that permits the timely recognition of potential problems and the luxury of an appropriate and reasoned solution to any problem that was not foreseen.

The data in the ASRS incident records confirm that encounters between civilian and military aircraft are an ever-present issue. Although they do not occur very often, they demand a pilot’s attention as few other airborne events ever do.

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Airspace Segregation Initiated

The Federal Aviation Act of 1958, as amended, gives the FAA responsibility for safely and efficiently managing the nation’s airspace. The act requires the agency, in exercising this responsibility, to give full consideration to the requirements of national defense and of commercial and general aviation, and to the public right of freedom of transit through the navigable airspace.

The SUA program developed because of a need to segregate military testing and training activities which are often incompatible with or dangerous to civilian aircraft operations. With little competition from other airspace users, SUA was expanded during the years to meet increasing military requirements.

Prior to the mid-1970s, certain non-hazardous military flight training, such as aerobatics, air combat maneuvering, etc., was conducted across the country in free airspace with civil aviation being unaware of either the location or the type of activity being conducted. Increasing concern about the potential for a collision between civil and military aircraft prompted the FAA, in 1975, to establish a new category of SUA — the military operations area. MOAs were designed to contain nonhazardous military flight training rather than permit it in uncharted, free airspace as was done in the past. While the implementation of the MOA program resulted in a sudden and significant increase in the total number of SUA areas, the confining of nonhazardous training to MOAs

actually constituted an overall reduction in the amount of airspace previously utilized for military training.

The airspace picture has changed considerably during the decades since military airspace was first designated. Population and economic growth, airline deregulation and a greater appreciation of environmental values, as well as increased military airspace needs, have combined to produce today's highly competitive airspace situation. The military's recognition of the safety benefits derived from consolidating training in specific areas further compounded the issue. Once remotely located SUA complexes, many with millions of U.S. dollars invested in ground equipment, are now experiencing population and commercial air route encroachment. The combination of these factors has caused the nation's airspace to become a limited resource with each segment of the aviation community competing for access to accommodate its respective needs.

Military Airspace Explained

The U.S. Department of Defense (DOD) management of airspace designated for military use is decentralized. Each of the military departments has a central office that sets policy and oversees airspace matters for that department. Joint service airspace issues or inter-service problems are resolved by a DOD headquarters committee — the DOD Policy Board on Federal Aviation — composed of service representatives. Airspace proposals generated by all departments require review and approval of the sponsoring department's command elements prior to formal submission to the FAA. FAA headquarters has final approval authority for airspace proposals, although requests are first reviewed by, and usually negotiated with, the agency's appropriate local facilities and regional offices. The FAA provides the public with an opportunity to comment on military airspace proposals prior to taking final action. In addition, under military regulations, all airspace proposals must comply with the National Environmental Policy Act which protects those on the ground from high levels of noise pollution. Once approved, the scheduling and use of military airspace is delegated to subordinate commands and units.

Special Use Airspace Defined

By definition, special use airspace consists of that airspace wherein activities must be confined because of their nature, or wherein limitations are imposed upon aircraft operations that are not a part of those activities, or both. Except for controlled firing areas, special use airspace areas are depicted on aeronautical charts, both graphically (see following discussion) and in a listing that includes location, height, time of use and control-

ling, or using, agency.

Prohibited Area

Prohibited areas contain airspace of defined dimensions identified by an area on the surface of the earth within which the flight of aircraft is prohibited. Such areas are established for security or other reasons associated with the national welfare. Prohibited areas are marked in dark blue on sectional charts and are identified by the letter "P" followed by a number designator (Figure 1). An example of a prohibited area is P-56 on the Washington sectional chart. P-56 includes the airspace over the White House and the U.S. Capitol in Washington, D.C. No person may operate an aircraft in this airspace without permission. There are only a few prohibited areas in the United States, but all pilots operating in U.S. airspace should be aware of their existence.

Restricted Area

Restricted areas contain airspace identified by an area on the surface of the earth within which the flight of aircraft, while not wholly prohibited, is subject to restrictions. Activities within these areas must be confined because of their nature or limitations imposed upon aircraft operations that are not a part of those activities, or both. Restricted areas denote the existence of unusual, often invisible, hazards to aircraft such as artillery firing, aerial gunnery operations or guided missile flights. Penetration of restricted areas without authorization from the using or controlling agency may be extremely hazardous to the aircraft and its occupants. Restricted areas are marked in dark blue on sectional charts and identified by the letter "R" followed by a number designator (Figure 1). Affected altitudes, times of use and controlling

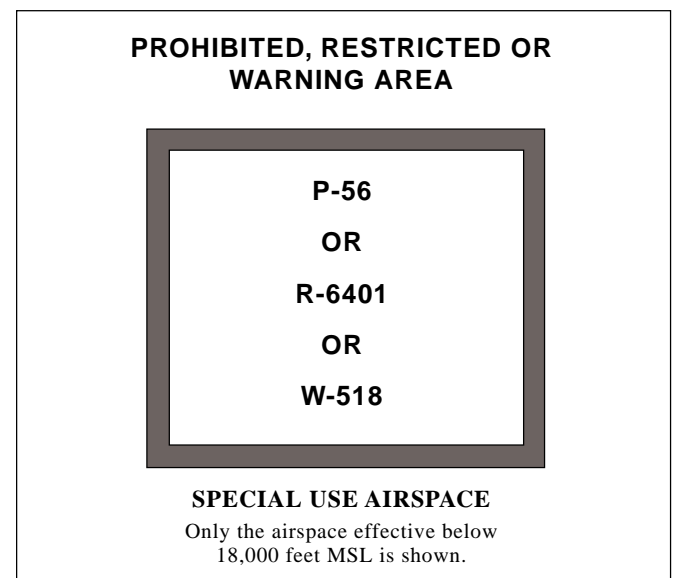


Figure 1

agency information also is printed in dark blue in the margins.

Air traffic control (ATC) facilities apply the following procedures when aircraft are operating on an IFR clearance (including those cleared by ATC to maintain VFR on top) via a route which lies within joint-use restricted airspace.

If the restricted area is active and has not been released to the controlling agency (FAA), the ATC facility will issue a clearance which will ensure that the aircraft avoids the restricted airspace unless it is on an approved altitude reservation mission or has obtained its own permission from the using agency to operate in the airspace and so informs the controlling facility.

(Note: The above categories apply only to joint-use restricted airspace and not to prohibited and non-joint use airspace. For the latter categories, the ATC facility will issue a clearance so the aircraft will avoid the restricted airspace unless it is on an approved altitude reservation mission or has obtained its own permission from the using agency to operate in the airspace and so informs the controlling facility.)

Restricted airspace is depicted on the en route chart appropriate for use at the altitude or flight level being flown. For joint-use restricted areas, the name of the controlling agency is shown on these charts. For all prohibited areas and non-joint use restricted areas, unless otherwise requested by the using agency, the phrase "NO A/G" (no air-ground communications) is shown.

Warning Area

Warning areas encompass airspace which may contain hazards to non-participating aircraft in international airspace. Warning areas are established beyond the 12-mile offshore limit. Although the activities conducted within warning areas may be as hazardous as those in restricted areas, warning areas cannot be legally designated as restricted areas because they are over international waters. Penetration of warning areas during periods of activity may be hazardous to the aircraft and its occupants.

Offshore warning areas are marked in dark blue over light blue water and identified by the letter "W" followed by a number designator. The altitude, time of use and controlling agency is given in blue letters in margins of the chart (Figure 1). The FAA has no statutory responsibility over international airspace, but ATC controllers provide service over international waters. Pilots flying VFR can fly through warning areas at any time; they are encouraged, however, in preflight plan-

ning to check with the nearest flight service station (FSS) for the status of the airspace.

Military Operations Area (MOA)

MOAs consist of airspace with defined vertical and lateral limits established for the purpose of separating certain military training activities from IFR traffic. Whenever a MOA is being used, non-participating IFR traffic may be cleared through a MOA if IFR separation can be provided by ATC. Otherwise, ATC will reroute or restrict non-participating IFR traffic.

Most training activities conducted in MOAs necessitate aerobatic or abrupt flight maneuvers. Military pilots conducting flight in DOD aircraft within a designated and active military operations area (MOA) are exempted from the provisions of FAR 91.303(c) and (d) which prohibit acrobatic flight within federal airways and control zones.

Pilots operating VFR should exercise extreme caution while flying within a MOA when military activity is being conducted. The activity status (active/inactive) of MOAs may change frequently. Therefore, pilots should contact an FSS within 100 miles of the area to obtain accurate real-time information concerning the MOA hours of operation. Flight service stations will only provide information on MOAs when specifically requested by the pilot. Prior to entering an active MOA, pilots should contact the controlling agency for traffic advisories.

MOAs are outlined in magenta on Sectional VFR Terminal Area charts, and in brown on Low Altitude En Route Charts (Figure 2). The active times and altitudes are also shown in magenta on sectional charts.

Alert Area

Alert areas are depicted on aeronautical charts to inform non-participating pilots of areas that may contain a high volume of pilot training or an unusual type of aerial activity. Pilots should be particularly alert when flying in these areas. All activity within an alert area must be

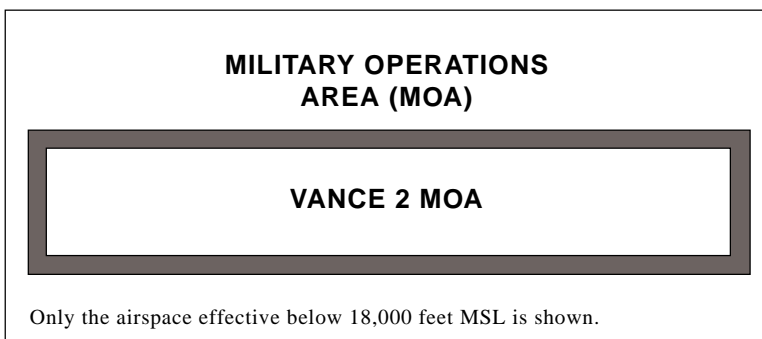


Figure 2

conducted in accordance with FARs and pilots of participating aircraft as well as pilots transiting the area are equally responsible for collision avoidance. Alert areas are marked in dark blue on sectional charts with cross-hatched borders similar to the previously illustrated SUA areas and identified by the letter “A” followed by a number designator.

Besides the military, aircraft manufacturers and some special industries use this airspace. An example of an Alert Area is A-381 on the New Orleans sectional chart. At this location, there is a high concentration of commercial helicopters and seaplanes which operate near oil drilling platforms.

Controlled Firing Areas

Controlled firing areas contain activities which, if not conducted in a controlled environment, could be hazardous to non-participating aircraft. The distinguishing feature of the controlled firing area, as compared to other special use airspace, is that its activities are suspended immediately when spotter aircraft, radar or ground lookout positions indicate an aircraft might be approaching the area. There is no need to chart controlled firing areas since they do not cause a non-participating aircraft to change its flight path.

Military Training Routes (MTR)

One phase of military training involves low-level combat tactics. The required maneuvers and high speeds may occasionally make the see-and-avoid aspect of VFR flight more difficult without increased vigilance in areas containing such operations. In an effort to ensure the greatest practical level of safety for all flight operations, the MTR program was conceived.

The MTR program is a joint venture by the FAA and the DOD. MTR routes are mutually developed for use by the military for the purpose of conducting low-altitude, high-speed training. Routes higher than 1,500 feet above ground level (agl) are developed to be flown, to the maximum extent possible, under IFR criteria. The routes at 1,500 feet agl and below are generally developed to be flown VFR.

Generally, MTRs are established below 10,000 feet mean sea level (msl) for operations at speeds in excess of 250 knots. However, route segments may be defined at higher altitudes for purposes of route continuity. For example, route segments may be defined for descent, climbout and mountainous terrain. There are IFR and VFR routes as follows:

- IFR Military Training Routes — IR: Operations on these routes are conducted in accordance with

IFR clearances regardless of weather conditions.

- VFR Military Training Routes — VR: Operations on these routes are conducted in accordance with VFR criteria.

Military training routes are identified and charted as follows:

Route identification

- IR and VR at or below 1,500 feet agl (with no segment above 1,500) will be identified by four-digit numbers, e.g., IR 1006, VR 1007.
- IR and VR above 1,500 feet agl (segments of these routes may be below 1,500) will be identified by three-digit numbers, e.g., IR 008, VR 009.

Alternate IR/VR routes or route segments are identified by using the basic or principal route designation followed by a letter suffix, e.g., IR008A, VR1007B.

Route charting

- *Sectional Chart.* This chart depicts all IR and VR routes (Figure 3).
- *IFR Low Altitude En Route Chart.* This chart

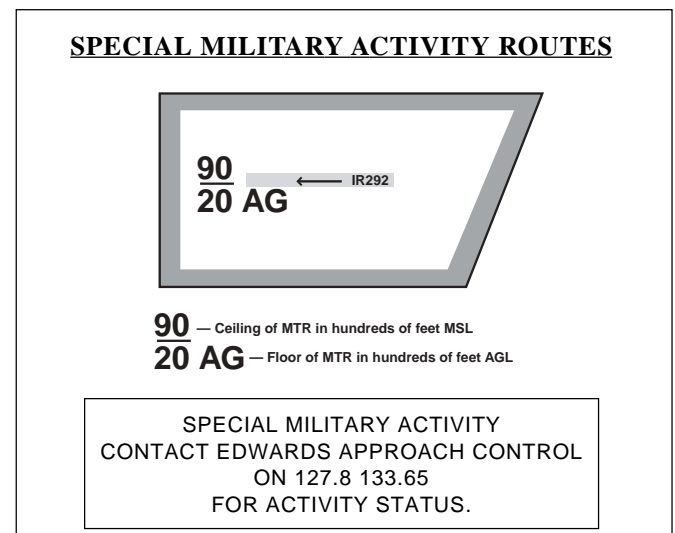


Figure 3

depicts all IR routes and all VR routes that accommodate operations above 1,500 feet agl (Figure 4).

- *VFR Planning Chart.* This chart depicts route (military training activities such as IR and VR regardless of altitude), MOAs, restricted, warning and alert areas.

MILITARY TRAINING ROUTES (MTR)

Military Training Routes (MTR's) 5 NM or less

IR - 107 → VR - 134 →

Military Training Routes (MTR's) greater than 5 NM

IR - 113 → VR - 133 →

Arrow indicates Single Direction Route

All MTR's may extend from surface upwards
All MTR's (IR and VR) except those VR's at or below 1500' ALG are shown.
CAUTION: Inset charts do not depict Military Training Routes (MTR's).

Figure 4

Area Planning (AP/1B) Chart (DOD Flight Information Publication — FLIP). This chart is published by the DOD primarily for military users and contains detailed information on both IR and VR routes. The FLIP contains charts and narrative descriptions of MTRs. This publication is available to the general public by single copy or annual subscription from the Director, DMACSC, Attention: DOCP, Washington, DC 20315-0020 U.S. It also is available for pilot briefings at FSSs and at many airports.

Non-participating aircraft are not prohibited from flying within an MTR; however, extreme vigilance should be exercised when conducting flight through or near these routes. Pilots should contact the FSS within 100 nm of a particular MTR to obtain current information or route usage in their vicinity. Information available includes

times of scheduled activity, altitudes in use on each route segment and actual route width. Route width varies for each MTR and can extend several miles on either side of the charted MTR centerline. Route width information for IR and VR MTRs is also available in the FLIP AP/1B along with additional MTR information. When requesting MTR information, pilots should give the FSS their position, route of flight and destination, in order to reduce frequency congestion and permit the FSS to identify the MTR routes which could be a factor. ♦

About the Author

Richard D. Gless is an independent aviation safety consultant. He retired in early 1991 from the AOPA Air Safety Foundation, where he directed various aviation safety courses since 1974 and was the editor of the Flight Instructor Safety Report.

A former career aviator in the U.S. Navy, Gless has accumulated more than 10,000 flying hours. In the service, he flew the Martin Mars flying boat on Pacific routes, commanded a squadron of Lockheed P3A Orion patrol aircraft and headed the Navy flight standardization office at the Pentagon. He later was employed by American Airlines as a first officer.

His aeronautical credentials include flight engineer, airline transport pilot and flight and ground instructor certificates. A current pilot, Gless flies his own Beechcraft Debonair.

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